Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A consumable electrode type arc welding machine which makes use of an arc generated between a base metal of welding and a wire supplied thereto, the machine comprising:

a welding voltage detection circuit for detecting a welding voltage and outputting a welding voltage detection signal;

a welding current detection circuit for detecting a welding current and outputting a welding current detection signal;

a short-circuit arc judgment circuit for outputting a short-circuit arc judgment signal, after accepting the welding voltage detection signal and judging whether the machine is in a short-circuit state or in an arc state;

a short-circuit waveform control circuit for outputting a short-circuit waveform control signal after accepting the welding current detection signal;

an arc waveform control circuit for outputting an arc waveform control signal for an arc period after accepting the welding voltage detection signal; and

a switching circuit which accepts the short-circuit waveform control signal and the arc waveform control signal and selects the arc waveform control signal in the arc period or the short-circuit waveform control signal in the short-circuit period based on the short-circuit arc judgment signal, and outputs a selected signal;

wherein a welding power is controlled by the output from the switching circuit,

characterized in that,

the machine further comprises an arc resistance calculator for calculating and outputting an arc resistance signal after accepting the welding voltage detection signal and the welding

current detection signal, and the arc resistance signal is delivered to ~~at least one of~~ the short-circuit waveform control circuit and the arc waveform control circuit for controlling the welding power,

wherein, ~~at least one of:~~

~~a)~~ the short-circuit waveform control circuit controls the welding voltage to decrease when the arc resistance exceeds a resistance threshold, controls the welding voltage to increase and the short-circuit period to decrease when the arc resistance is below the resistance threshold, and

~~b)~~ the arc waveform control circuit controls the welding current to be held at a constant level when the arc resistance exceeds the resistance threshold, the constant level current being greater than a normal welding current generated based on the welding voltage.

2. (Original) The consumable electrode type arc welding machine according to claim 1, wherein

the short-circuit waveform control circuit accepts the welding current detection signal and the arc resistance signal and outputs a short-circuit waveform control signal based on the arc resistance signal,

the switching circuit selects the arc waveform control signal when the short-circuit arc judgment signal indicates the arc period, when the short-circuit arc judgment signal indicates the short-circuit period, the switching circuit selects the short-circuit waveform control signal, and outputs a selected signal,

the welding power is controlled based on the output from the switching circuit.

3. (Original) The consumable electrode type arc welding machine according to claim 1, wherein

the arc waveform control circuit accepts the welding voltage detection signal and the arc resistance signal and outputs an arc waveform control signal based on the arc resistance signal,

the switching circuit selects the arc waveform control signal when the short-circuit arc judgment signal indicates the arc period, when the short-circuit arc judgment signal indicates the short-circuit period, the switching circuit selects the short-circuit waveform control signal, and outputs a selected signal,

the welding power is controlled based on the output from the switching circuit.

4. (Original) The consumable electrode type arc welding machine according to claim 1, wherein

the short-circuit waveform control circuit accepts the welding current detection signal and the arc resistance signal and outputs a short-circuit waveform control signal based on the arc resistance signal,

the arc waveform control circuit accepts the welding voltage detection signal and the arc resistance signal and outputs an arc waveform control signal for the arc period based on the arc resistance signal,

the switching circuit selects the arc waveform control signal when the short-circuit arc judgment signal indicates the arc period, when the short-circuit arc judgment signal indicates the short-circuit period, the switching circuit selects the short-circuit waveform control signal, and outputs a selected signal,

the welding power is controlled based on the output from the switching circuit.

5. (Currently Amended) A consumable electrode type arc welding machine which makes use of an arc generated between a base metal of welding and a wire supplied thereto, the machine comprising:

a welding voltage detection circuit for detecting a welding voltage and outputting a welding voltage detection signal;

a welding current detection circuit for detecting a welding current and outputting a welding current detection signal;

a short-circuit arc judgment circuit for outputting a short-circuit arc judgment signal after accepting the welding voltage detection signal and judging whether the machine is in a short-circuit state or in an arc state;

a short-circuit waveform control circuit for outputting a short-circuit waveform control signal after accepting the welding current detection signal;

an arc waveform control circuit for outputting an arc waveform control signal for an arc period after accepting the welding voltage detection signal; and

a first switching circuit which accepts the short-circuit waveform control signal and the arc waveform control signal and selects the arc waveform control signal in the arc period or the short-circuit waveform control signal in the short-circuit period based on the short-circuit arc judgment signal, and outputs a selected signal;

wherein a welding power is controlled by the output from the first switching circuit,

characterized in that,

the machine further comprises:

an arc resistance calculator for calculating and outputting an arc resistance signal after accepting the welding voltage detection signal and the welding current detection signal, the arc resistance calculator calculating the arc resistance signal by dividing the welding voltage detection signal by the welding current detection signal;

a constant-current control period setting unit for outputting a constant-current control period signal which indicates a constant-current control period after accepting the arc resistance signal when the arc resistance signal continues exhibiting a value that is greater than a certain specific value for a predetermined period of time;

a constant-current circuit for outputting a constant-current signal for implementing a certain specific constant-current value after accepting the welding current detection signal and based on the inputted welding current detection signal; and

a second switching circuit for selecting, in accordance with the constant-current control period signal, one of the constant-current signal in the constant-current control period and the

output signal from the first switching circuit in a period other than the constant-current control period, and outputting a selected signal;

wherein in the period other than the constant-current control period, the arc resistance signal is delivered to ~~at least one of~~ the short-circuit waveform control circuit and the arc waveform control circuit, and the welding power is controlled based on the output from the second switching circuit, and

wherein, ~~at least one of:~~

~~a)~~ the short-circuit waveform control circuit controls the welding voltage to decrease when the arc resistance exceeds a resistance threshold, controls the welding voltage to increase and the short-circuit period to decrease when the arc resistance is below the resistance threshold, and

~~b)~~ the arc waveform control circuit controls the welding current to be held at a constant level when the arc resistance exceeds the resistance threshold, the constant level current being greater than a normal welding current generated based on the welding voltage.

6. (Original) The consumable electrode type arc welding machine according to claim 5, wherein

the short-circuit waveform control circuit accepts the welding current detection signal and the arc resistance signal and outputs a short-circuit waveform control signal based on the arc resistance signal,

the first switching circuit selects the arc waveform control signal when the short-circuit arc judgment signal indicates the arc period, when the short-circuit arc judgment signal indicates the short-circuit period, the switching circuit selects the short-circuit waveform control signal, and outputs a selected signal,

the welding power is controlled based on the output from the second switching circuit.

7. (Original) The consumable electrode type arc welding machine according to claim 5, wherein

the arc waveform control circuit accepts the welding voltage detection signal and the arc resistance signal and outputs an arc waveform control signal based on the arc resistance signal,

the first switching circuit selects the arc waveform control signal when the short-circuit arc judgment signal indicates the arc period, when the short-circuit arc judgment signal indicates the short-circuit period, the switching circuit selects the short-circuit waveform control signal, and outputs a selected signal,

the welding power is controlled based on the output from the second switching circuit.

8. (Original) The consumable electrode type arc welding machine according to claim 5, wherein

the short-circuit waveform control circuit accepts the welding current detection signal and the arc resistance signal and outputs a short-circuit waveform control signal based on the arc resistance signal,

the arc waveform control circuit accepts the welding voltage detection signal and the arc resistance signal and outputs an arc waveform control signal for the arc period based on the arc resistance signal,

the first switching circuit selects the arc waveform control signal when the short-circuit arc judgment signal indicates the arc period, when the short-circuit arc judgment signal indicates the short-circuit period, the switching circuit selects the short-circuit waveform control signal, and outputs a selected signal,

the welding power is controlled based on the output from the second switching circuit.